

A few miles east of one of my former homes—the settlement of Berkeley, in California—there is an isolated peak of moderate height, from the top of which you may survey an area equal to that of the State of New York. From Mount Shasta on the north to Mount Whitney on the south, you may trace the jagged, often snow-white, crest which bears the name of Sierra Nevada. Here and there a peak rises a little higher than its neighbours, and can be identified from the look-out; but human vision cannot see the chains beyond the chains, nor the marvellous valley Yosemite and the beautiful Lake Tahoe which are sheltered within the nearest range of hills. All that the eye can distinguish on the horizon are a few of the loftiest summits as it turns toward the east, and a glimpse of the Farallone Islands as it turns toward the west. So to-day, from a hill not very high, we have looked upon a broad area, distinguishing only the chief features of the landscape,—but we have seen the mountains and the sea.

A NEW ISLAND IN THE SOUTH SEAS

ACCORDING to the *Melbourne Argus* of December 10, further news respecting the volcanic outbreak which recently occurred in the Friendly Group has been received from Fiji, *via* Auckland. Intelligence concerning it first arrived there by the schooner *Midge*, from Tonga. Before the vessel arrived, however, the eruption had already reported itself to the eastern portion of the Fiji Group, and the *Argus* Correspondent furnishes the following account of it:—

“At Ogea, one of the island outposts lying nearest to the point of eruption, and distant from it about 175 miles in a south-west direction, heavy discharges as of siege artillery were heard on October 14, and continued at short intervals up till the 17th. It is to be noted in connection with this that the outbreak occurred, or was first noticed, in Tonga on the 12th, and that mention is made of ‘a low rumbling noise at intervals during the night.’ During the continuance of these heavy discharges, Ogea was frequently and very violently shaken by earthquakes, so that the people were in a state of great consternation. At night-time a lurid glare, as from a great fire, was visible in the direction of Tonga, and these phenomena culminated in a terrific roar on the morning of the 17th, such as might be produced by thousands of big guns being discharged simultaneously. Next day a small vessel which had been working the open sea between the Fijian and Friendly Groups, called in to Ogea and reported having passed through vast fields of pumice. This served to confirm the idea generally prevailing that a terrible calamity in the form of a volcanic outbreak had befallen and had overwhelmed Tonga.”

The Tonga Correspondent of the *Fiji Times*, who was an eye-witness of the eruption, has communicated the following account of it to that journal:—

“On the night of Sunday, October 11, 1885, more than one slight shock of an earthquake was felt, and lightning was seen at intervals at different quarters. Several persons noticed a low rumbling noise at intervals during the night. At sunrise on Monday morning, October 12, the natives reported that a steamer was coming in. The Tongan Government was induced to send out the schooner *Sandfly*, and about noon on the day the outbreak was first seen. Dr. Buckland, accompanied by the Premier and various officials, started to see the volcanic eruption which it was evident was going on. The *Sandfly* returned on the 16th inst. and reported having reached [the scene of the eruption on the 13th, but too late to see much: that on the following morning a small island became for the first time visible, and that the vessel had approached within about a mile of the shore, but a strong current prevented nearer approach. On October 17 a number of residents chartered Tugi's schooner, and started for the spot, and on the succeeding morning witnessed a spectacle of such surpassing magnificence as men have seldom been permitted to view. An island of, I believe, not less than nine miles superficial area was seen by us, which had been upheaved, presuming [the *Sandfly's* observations to be correct, within four days. On its shore a submarine volcano was belching out a fearful quantity of what I believe to be steam and salt water, throwing it upwards in a column for a distance, I was told by a competent gentleman, of a mile. To give an accurate description in detail of the column and eruption generally is impossible. It is indescribable. The shapes assumed by the steam clouds, after the greatest height had been reached, were inexpressibly

beautiful, and were fantastic to a degree. While these clouds were still wreathing and curling, another and another column, with well-defined lines, would shoot upwards, and the downpour of liquid and the wreathing and curling were again and again renewed. The island, named by many ‘Fakaogo fei lagi,’ or Takaogo Island, is situated about 16 or 20 miles to the north-west of Honga Hapai. I have not a chart to refer to, but believe it is on the site of the Cudibras (?) Reef, marked on the chart, and which is some distance south of Tonga and Kao. Vessels coming here from Fiji will be able to visit the island without going much from their course. At night time flashes of light are seen, but whether proceeding from flames of volcanic fire or from the electricity generated during the condensation of the volumes of steam, will be best known to scientific people. Many and various are the conjectures as to how the island has been formed, and conjectures alone can be made until the island is visited. The whole matter is likely to create great interest, and will afford an opportunity to scientific people to ascertain, with a tolerable amount of certainty, the exact manner in which these islands of the Pacific have in past ages been produced. The height of the island on the occasion of the visit of the *Sandfly* was from 20 to 30 feet, and when we saw it on Saturday it appeared to be from 200 to 300 feet.”

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—Whatever be the fate of the new Moderations Scheme now being considered by a Committee of Congregation, the present academic year will be remarkable for the vigorous onslaught made by the younger Faculties on the time-honoured requirement at Pass Moderations of “a little Latin and less Greek.” The waste of a year over classical work having no direct bearing on the final school chosen by the student had become so great a tax on time and patience that, when a blow was at last struck at the evil, but little opposition was expressed in quarters where small sympathy with modern studies was thought to dwell. If the Committee can agree on a working scheme, a great relief will be afforded to students in Natural Science in Oxford.

It is with much pleasure that we notice, after long interval, two Colleges offering Fellowships in Pure Science. Merton offers a Fellowship in Physics, and Lincoln in Biology. Besides these Fellowships, Pembroke has a vacant Medical Fellowship.

The nomination of Examiners in the Honour School of Natural Science (now conducted by a Committee of the Faculty) took place this week. Prof. Burdon-Sanderson succeeds Dr. Gamgee in Physiology, Mr. H. B. Dixon succeeds Mr. Vernon Harcourt in Chemistry, and Mr. J. Walker succeeds Mr. Hayes in Physics.

The following courses of lectures and practical classes will be held during the present term:—

In the Physical Department of the Museum, Prof. Clifton lectures on Electricity, Mr. Walker on Polarised Light, and practical instruction is given by the Professor, Mr. Walker, and Mr. Selby. At Christchurch Mr. Baynes lectures on Thermodynamics, and gives practical instruction in Electrical Measurements. At Balliol Mr. Dixon lectures on Elementary Heat and Light.

In the Chemical Department of the Museum Prof. Odling lectures on the Phenic Compounds; Mr. Fisher continues his course on Inorganic Chemistry, and Dr. Watts continues his course on Organic Chemistry. Practical instruction is given by Messrs. Fisher, Watts, Marsh, and Baker. Practical instruction is also given in the Christchurch and Balliol Laboratories.

In the Morphological Department Prof. Mosley lectures on the Anatomy of the Vertebrata; Mr. Spenser has a course on Elementary Animal Morphology; and Mr. Barclay Thompson, on the Osteology and Distribution of the Amphibia and Reptilia. Mr. Arthur Thomson lectures on Human Myology, and has a class for Practical Anatomy. Practical instruction in Comparative Anatomy is given by the Professor, and Messrs. Robertson and Spenser.

In the Physiological Department Prof. Burdon-Sanderson lectures on the Physiology of the Nervous System, and will also give twelve elementary lectures during the present and next term on the Vital Phenomena of men and animals. Mr. Dixey lectures and has a class for Practical Histology; Dr. Gotch has a class for Practical Physiology; and Mr. Poulton lectures on the Physiology and Histology of the Special Senses.

In the Geological Department Prof. Prestwich lectures on the Palæozoic series; Prof. Story-Maskelyne on Crystallographic Symmetry; and Dr. Tylor on Mankind, their Distribution, Antiquity, and Early Condition.

At the Botanical Garden, Prof. Bayley Balfour lectures and gives practical instruction in Vegetable Morphology and Physiology. Prof. Gilbert lectures on Field Experiments.

Scholarships in Natural Science are offered this term by Magdalen and Jesus Colleges, and next term by Queen's College.

The next examination for a Radcliffe Travelling Fellowship will commence on Monday, February 8.

CAMBRIDGE.—Mr. J. H. Randell, M.A., who has been elected to a Fellowship at Pembroke College, was 5th Wrangler in 1882, first class in the Natural Sciences Tripos, Part II., 1883, and is now additional Demonstrator of Experimental Physics.

It is proposed by the Council that the appointments of University Lecturers shall be tenable "for such a term of years, not exceeding five, as the General Board shall prescribe," the statutory provision for cancellation remaining still in force for extraordinary occasion.

A Shuttleworth Scholarship at Gonville and Caius College is vacant, and an examination for it will commence on March 19 next. The subjects are Botany and Comparative Anatomy in its most general sense (including Zootomy and Comparative Physiology), and there will be practical work in all these subjects. Candidates must be registered medical students of Cambridge University, and at least of eight terms' standing. The Scholarship is of the value of 60*l.* per annum, and tenable for three years. A Foundation Scholarship may be awarded to the successful candidate in addition.

In the scheme of Entrance Scholarship Examinations at Girton College recently issued no Natural Science subject is included in the optional subjects. One Gilchrist Scholarship, tenable at Newnham or Girton, will be awarded, among other groups, for proficiency in Physical and Natural Science at the next Cambridge Higher Local Examination.

OWENS COLLEGE, MANCHESTER.—The following appointments have recently been made:—To the Brackenbury Professorship of Physiology, William Stirling, M.D., D.Sc., Regius Professor of the Institutes of Medicine in the University of Aberdeen; to the Lectureship in Medical Jurisprudence, John Dixon Mann, M.D., M.R.C.P.

SCIENTIFIC SERIALS

Journal of the Franklin Institute, No. 717, September 1885.

—J. Sartain, on the ancient art of painting in encaustic.—Dr. P. H. Van der Weyde, on the new system of telegraphy to and from moving trains. This paper describes Phelps's method of communicating by induction.—A. E. Outerbridge, a lecture on matter.—S. W. Holman, friction of leather belts on iron pulleys; an experimental study of the slip, and coefficients of sliding friction.—A. S. Greene, on the jacketing of working cylinders of steam-engines.—Otto Luthy, on Florida sugar.—Pedro G. Salom, on the metallurgy of steel; an essay on Bessemer and other modern processes.

No. 718, October 1885.—E. A. Gieseler, on tidal theory and tidal prediction.—Chief-Engineer Isherwood, an account of experiments on a condensing compound engine.—C. L. Gateley and A. P. Kletzsch, cylinder condensation in steam-engines. Gives first part of some researches made on a large engine by two students of Stevens Institute.—W. Curtis Taylor, three new portraits of Washington. A study in composite photography.—F. Lynwood Garrison, the microscopic structure of iron and steel. Accompanying this paper are several photolithographed plates, one of which shows the transition in structure of a "burned-out" fire-grate bar of cast-iron into steel by the action of the fire.

No. 719, November 1885.—E. A. Gieseler, on tidal theory and tidal prediction (conclusion).—C. L. Gateley and A. P. Kletzsch, cylinder condensation (continued).—Pedro G. Salom, recent improvements in the manufacture of iron and steel. Describes the "Clapp-Griffiths," the "Davy," the "Gordon," and the "Avesta" processes.—Prof. E. J. Houston, glimpses of the International Electrical Exhibition, No. 8. Reis's articulating telephone. An exhaustive examination of Reis's various

suggestions and instruments.—S. H. Needles, a translation of a note of M. Blavier on the influence of electric storms on subterranean telegraph wires.

Wiedemann's Annalen, Band xxvi. No. 10, October 1885.—Fr. Kohlrausch, on the conductivity of certain electrolytes in extremely dilute aqueous solutions. This paper contains an historical summary of methods and results; a discussion of the method of working with alternate currents; accounts of various new experimental researches.—E. Pfeiffer, on the electric conductivity of mixtures of ethyl-alcohol and ethyl-ether. The author believes that both pure alcohol and pure ether possess metallic conductivity, though both are extremely bad conductors.—G. C. Foster, on a modified form of Wheatstone's Bridge and a method of measurement of small resistances. This is a reprint of Prof. Foster's paper of 1872 in the *Journal of the Society of Telegraph Engineers*, which appears to be unknown outside England.—A. Oberbeck, on a phenomenon of electric oscillations similar to resonance. This refers to the effect of condensers on alternate currents recently investigated by Hopkinson.—K. Angström, on the diffusion of radiant heat from plane surfaces. The research was made by an apparatus called a "galvanic differential thermometer," resembling Langley's "bolometer." Results are given for a number of substances at different angles of incidence.—A. Schleiermacher, on the dependence of heat-radiation upon temperature and the law of Stefan. These researches confirm the accuracy of Stefan's law for perfectly black bodies.—M. Thiesen, on the law of the resistance of air.—E. Dorn, experimental confirmation, for pyro-electricity, of the law that the two kinds of electricity are generated in equal quantity.—E. Dorn, some lecture experiments. These relate to Leslie's apparatus, interference of sounds, vortex-rings, Pului's apparatus for Joule's equivalent, and cooling of wire by sudden extension.—P. Brühl, on forked lightning.

No. 11, November.—E. Gumlich, theory of Newton's Rings in transmitted light. The author concludes that the effect of multiple reflection in the air-film is to render the dark rings in-completely dark in the transmitted set, and the bright rings in-completely bright in the reflected set.—Leonhard Weber, measurement of intensity of diffused daylight. The quantities and qualities of daylight at Breslau were measured against those of standard flames from December 1884 to July 1885, with the following mean relative figures:—December, red 3834, green 11,514; January, red 6875, green 20,447; June, red 51,803, green 151,233; July, red 37,309, green 105,230.—W. von Bezold, on formation of the triangle of colours by true colour mixture. Three shaded triangles of red, blue, and green are optically superposed.—W. Müller-Erzbach, dissociation of salts containing water.—F. Kohlrausch, on the inconstancy of the damping-function of a galvanometer, and its influence on the determination of absolute resistance by means of the earth-inductor.—R. Colley, on some new methods for observing electric oscillations, and some applications of them. To measure electric oscillations the author has applied (1) a telephone receiver, (2) a mirror-oscilloscope, and (3) a gas-flame oscilloscope; descriptions of these are given, with drawings.—A. Koepsel, determination of the constants of electro-magnetic rotation of the plane of polarisation of sodium light in bisulphide of carbon. The apparatus was a modified Lippich's half-shadow polarimeter. The result gave for the absolute unit of rotation at 18° C., $0.0419913' \pm 0.0000078'$; in close agreement with Lord Rayleigh's value, $0.042002'$.

Journal de Physique, t. iv., September 1885.—H. Dufet, experimental researches on the variation of the indices of refraction under the influence of temperature. The points comprised are: (1) variation of ordinary and extraordinary indices of quartz; (2) variation of index of water by prism method and by method of Talbot's fringes with aid of a lamina of quartz; (3) variation of indices of fluor and of beryl by the same method; (4) variations of indices of bisulphide of carbon, of monobrom-naphthalene, turpentine, and alcohol by means of a lamina of quartz immersed in these liquids. The extraordinary index of quartz varies about seven times as much as the ordinary index, with variations of temperature.—MM. Bouty and Fousereau, on the employment of alternating currents for measuring liquid resistances. They criticise Kohlrausch's methods, in which a bridge and a receiving telephone are used, and show that ordinary resistance coils cannot be relied upon as having no self-induction. They describe a liquid rheostat, without polarisa-